Appendix G
Construction Quality Assurance Plan

Construction Quality Assurance Plan for the Corrective Measure Activities

Superior Tube Company
Evansburg, Pennsylvania

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1.0 INTRODUCTION

This Construction Quality Assurance Plan (CQAP) has been developed for the Superior Tube Company (Superior) facility in Lower Providence Township (the "Site"). This CQAP presents the inspection and testing activities to be conducted to ensure that all relevant Interim Measure (IM) and Corrective Measure (CM) activities will be implemented in accordance with the project specifications. This document has been prepared as part of the CM Design Report pursuant to the requirements of the 28 December 1998 Administrative Order on Consent (AOC) between Superior and the United States Environmental Protection Agency (EPA). This document supports the Quality Assurance Project Plan (QAPP), which presents the quality assurance activities for sample collection and laboratory analysis activities.

1.1 SITE DESCRIPTION AND HISTORY

Superior is a specialty tube manufacturer with a facility located at the intersection of Germantown Pike and Cross Keys Road, in Lower Providence Township, Montgomery County, Pennsylvania. The 96-acre Site is situated along the French Run, a tributary of Perkiomen Creek.

Since 1935, Superior has owned and operated the facility for the manufacture of specialty, cold drawn, precision tubing and tubular parts. The principal operations include drawing, welding, degreasing, pickling, annealing, cutting, forming, grinding, polishing, coating, and sandblasting metal tubing.

A more detailed description of the facility history, nature and extent of contamination, and scope of the IMs and CMs can be found in the AOC and Section 1 of the CM Design Report.

1.2 CORRECTIVE MEASURE ACTIVITIES

The corrective measures to be implemented for the Site include the following activities:

- sampling of soils and sediments within SWMU 17 and Outfalls 002 and 004 area to determine the final extent of excavation required;
- establishment of erosion and sediment control measures in excavation areas;

- excavation of impacted sediments exceeding the media cleanup criteria in the vicinity of Outfalls 002 and 004;
- excavation of impacted soils and sediments exceeding the media cleanup criteria within SWMU 17, down to a maximum depth of 3 feet (for a total of approximately 151 cubic yards);
- loading and off-site disposal of excavated materials;
- backfilling of excavated areas with imported clean fill;
- stabilization with erosion matting and/or vegetation in Outfall 002 and Outfall 004 areas disturbed by excavation activities;
- placement of an asphalt cover over the backfilled SWMU 17 excavation area; and
- removal of erosion and sedimentation control measures.

Other interim and corrective measures such as the ground water recovery and treatment systems and the in-situ vacuum extraction system have been addressed through previous plans and documents, and are not addressed in this CQAP.

2.0 *OBJECTIVE*

This Construction Quality Assurance Plan (CQAP) has been prepared to describe the components of the quality assurance program that will be used to ensure, with a reasonable degree of certainty, that the completed project meets or exceeds all design criteria, plans, and specifications. The CQAP will be used in monitoring and documenting the quality of materials used and the construction practices employed in their placement. It is the intention of this CQAP to establish procedures by which the construction process will be successfully implemented and to establish the roles and responsibilities for ensuring successful implementation of the corrective measures at the Site.

Included in this CQAP are the submittals, approvals, inspections, observations, testing, and documentation required during pre-construction, construction, and post-construction periods. The general scope of construction quality assurance (CQA) activities include the following:

- Pre-Construction CQA Requirements
  - Review scope of work, plans, specifications, and scheduling with the CM Contractor.
  - Review the CM Contractor's logistical approach to the construction activities, decontamination and health and safety.
  - Review material certifications and other submittals made in accordance with the technical specifications.
- Construction CQA Requirements
  - Observe conformance with requirements provided in the CM Design documents.
  - Review submittals and samples.
  - Perform required testing.
  - Prepare daily inspection reports and photographs.
- Post-Construction CQA Requirements
  - Final inspection.
  - Final documentation report.

3.0 *QUALIFICATIONS, AUTHORITY AND RESPONSIBILITY*

3.1 *QUALIFICATIONS*

The CQA Inspector will be present at the Site during construction activities to ensure that the work is performed in accordance with the CM Design documents. The CQA Inspector will be a representative of Superior, and will have sufficient experience to successfully oversee, implement and record the CQA activities. The CQA Inspector may also serve as the Site Representative as defined by the project technical specifications.

The CM Contractor will be responsible for the implementation of the corrective measures in accordance with the technical specifications. The CM Contractor shall permit access to the work activities as necessary to allow the CQA Inspector to complete the tests and inspections discussed herein or as otherwise necessary to verify compliance with the technical specifications. The CM Contractor will be required to submit and implement a quality control plan for the project, and will also be required to submit material certifications and the like for any materials utilized to complete the corrective measures.

3.2 *AUTHORITY*

The CQA Inspector will report to Superior and will serve as Superior's liaison with the CM Contractor with regards to quality issues. The CQA Inspector will also report on quality issues to the agency and perform any necessary liaison functions with agency contractors and other regulatory personnel.

3.3 *RESPONSIBILITIES*

The CQA Inspector is responsible for all aspects of executing the CQAP,, and will conduct the required on-site observations, testing and record keeping. The major responsibilities of the CQA Inspector include:

- Serve as Superior's liaison with the CM Contractor in interpreting and clarifying drawings, plans, specifications and other project documents.

- Complete periodic (e.g., daily on days of significant work) inspection reports which will provide a chronological framework of the project. At a minimum inspection reports will include the following, as appropriate:
  - Date and project name.
  - Weather conditions.
  - Locations of work.
  - Equipment and personnel used.
  - Description of work performed.
  - Decisions made regarding acceptance of portions of work, and/or remedial action to be taken in instances of substandard quality.
  - Project record photographs.
  - Signature of inspector.
- Verify that the equipment used in site operations monitoring (Health and Safety) meets the plan requirements and that the tests are conducted by qualified personnel according to the standardized procedures specified.
- Monitor all tests conducted as required by the contract design specifications.
- Perform independent on-site inspections and/or tests of the work in progress to assess compliance by the CM Contractor with the design criteria, plans, and specifications.
- Accept or reject units of work.
- Inspection of all erosion and sediment control measures.
- Prepare the Final CQA Report. The objective of the CQA Report is to provide a permanent record of the CM construction activities to assure to regulatory agencies that the site was remediated in accordance with the design specifications and regulatory requirements.

4.0 *PROJECT MEETINGS*

4.1 *PRE-CONSTRUCTION MEETING*

The CM Contractor, the CQA Inspector, and Superior will communicate regularly during the project to ensure its successful completion. This communication will begin with a pre-construction meeting that will be held at the Site. Agency representatives will be invited to attend the meeting. The purposes of the pre-construction meeting are to:

- Review the responsibilities of each party.
- Discuss the established protocol for observations, testing and health and safety.
- Discuss the established protocol for handling construction deficiencies, repairs, and re-testing.
- Review methods for documenting and reporting inspection, testing and sampling data.
- Review methods for distributing and storing documents and reports.
- Establish notification or call down procedure for incident/emergency response.
- Discuss any modification of the CQAP or specifications to ensure that site-specific considerations are addressed.
- Discuss procedures for the prevention of damage from inclement weather or other events.
- Conduct a site walk-around to verify that the design criteria, plans, and specifications are understood and to review material and equipment storage locations.
- The meeting will be documented by a designated person and minutes will be transmitted to all parties.

4.2 *PROGRESS MEETINGS*

Progress meetings will be held as needed, with the date of the first progress meeting to be decided at the pre-construction meeting. The purpose of the meeting is to:

- Review the previous period's activities and accomplishments.
- Review the work location and activities.

- Review the CM Contractor's personnel and equipment assignments.
- Discuss any potential construction problems.

As appropriate, informal progress meetings may be held at any time to discuss work assignments, sample results, work accomplished, and other issues.

4.3 *PROBLEM OR WORK DEFICIENCY MEETINGS*

Problem meetings cannot be predicted, although they will be conducted as necessary to define and resolve the problem or recurring work deficiency in the following manner:

- Define and discuss the problem or deficiency.
- Review alternative solutions.
- Implement a plan to resolve the problem or deficiency.

At a minimum, the following observations, inspections, and/or tests will be conducted during the work by the CQA Inspector or designated representative:

- Soil and sediment sampling activities will be overseen to ensure compliance with the CM Field Sampling Plan (bound separately).
- Imported borrow soil and aggregate materials will be inspected and tested if deemed necessary by the CQA Inspector to ensure that the materials meet the proper specifications.
- Compaction and density tests will be performed, using a Troxler nuclear density gauge, on the backfill soil and asphalt cap at SWMU 17 to ensure that the proper compaction specifications are met.
- Inspections of the implemented erosion and sedimentation controls will be conducted, especially following storm events.
- Periodic inspections of decontamination procedures will be conducted. The CQA Inspector shall have the right to order additional cleaning of equipment if visual evidence of contamination is noted.

The results of all inspections, observations and tests will be documented and compiled by the CQA inspector.

The Final Corrective Measures Implementation (CMI) Report provides a permanent record to document that the CM activities were completed in accordance with the approved project specifications. The Final CMI Report will be prepared with input from the CQA Inspector and the CM Contractor.

At a minimum, the Final CMI Report will contain:

- Summary of the Corrective Measure activities.
- Discussion of any modifications to the approved project plans and associated reasons.
- An evaluation of the degree to which the AOC objectives were met.
- CQA inspection reports.
- Test results and certifications of all materials used in the construction.
- Project photographs including those documenting work completion.
- Certification that the CM activities were conducted in accordance with the applicable plans and specifications.

Appendix H
Miscellaneous Ground Water Data

TABLE 1
SUPERIOR TUBE
WELL CONSTRUCTION DATA

Well Construction Data								
Well ID Number	Well Type	Average Pumping Rate (gpm)	Top of Casing Elevation (ft, msl)	Casing Depth (ft bls)	Total Well Depth (feet)	Open Interval (feet)	Base of Well Elevation (ft, msl)	Pump Setting (ft bls)
MW-1	Monitoring	NONE	158.24	19	110	91	48.24	NONE
2M	Recovery	1.4	163.91	19	200	181	-36.09	192
3M	Monitor	NONE	167.97	22.6	78	55.4	89.97	NONE
4M	Recovery	0.2	168.7	19.8	200	180.2	-31.3	192
5M	Recovery	1.3	170.88	19.6	200	180.4	-29.12	192
8M	Monitoring	NONE	125.76	19.6	55	35.4	70.76	NONE
9M	Monitoring	NONE	149.16	19.5	70	50.5	79.16	NONE
10M	Monitoring	NONE	195.95	19.45	60	40.55	135.95	NONE
12M	Monitoring	NONE	161.24	43	119	76	42.24	NONE
MW-15	Monitoring	NONE	190.85	79	135	56	55.85	NONE
MW-16	Monitoring	NONE	198.75	30	141	111	57.75	NONE
MW-17	Monitoring	NONE	200.27	18.5	164	145.5	36.27	NONE
MW-18	Recovery	9.9	184.16	235	550	315	-365.84	190
MW-19	Recovery	6.4	184.05	14	163.5	149.5	20.55	NONE
MW-20	Recovery	NONE	161.51	20	235	215	-73.49	NONE
MW-21	Monitoring	NONE	178.11	100	200	100	-21.89	NONE
MW-22	Recovery	28.7	161.55	20	235	215	-73.45	NONE
MW-30	Monitoring	NONE	202.19	43	221	178	-18.81	NONE
PW-1	Production	9.8	200.40	107	385	278	-184.60	360
PW-3	Recovery	14.7	186.92	21	196	175	-9.08	177
PW-3D	Recovery	NONE	187.24	240	358	118	-170.76	320
PW-4	Recovery	3.7	187.86	21.5	449	427.5	-261.14	400
PW-5	Production	36	205.58	17	535	518	-329.42	338
PW-6	Production	0.4	188.14	30	580	550	-391.86	355
PW-7	Production	5.1	220.32	29	524	495	-303.68	350
PW-8	Monitoring	NONE	126.50	40	405	365	-278.50	NONE
3868 Nancy Lane (Stone)	Monitoring	NONE	203.11	-	176	175.7	27.41	NONE
218 Collegeville Road (Buglak)	Monitoring	NONE	170.09	-	142	142.25	27.84	NONE
3941 Cross Keys Road (Turner)	Monitoring	NONE	170.60	-	131	131	39.60	NONE
3967 Cross Keys Road (Baldasano)	Monitoring	NONE	185.30	-	165	-	20.30	NONE
3969 Ridge Pike (Speck's Chicken)	Monitoring	NONE	171.92	-	128	-	43.92	NONE
3961 Ridge Pike (Collegeville Chiropractic)	Monitoring	NONE	170.30	-	147	-	23.30	NONE
3976 Germantown Pike (Welsh)	Monitoring	NONE	178.90	-	125	-	53.90	NONE
19 Ashton Road (Nabozny)	Monitoring	NONE	190.53	-	161	161	29.53	NONE

Notes:

"-" = Data Unknown
GW = Ground water
ft bls = feet below land surface
ft, msl = feet relative to mean sea level
gpm = gallons per minute

Figure 1
TCE at the Classic Coachworks Well - 1987 through Present

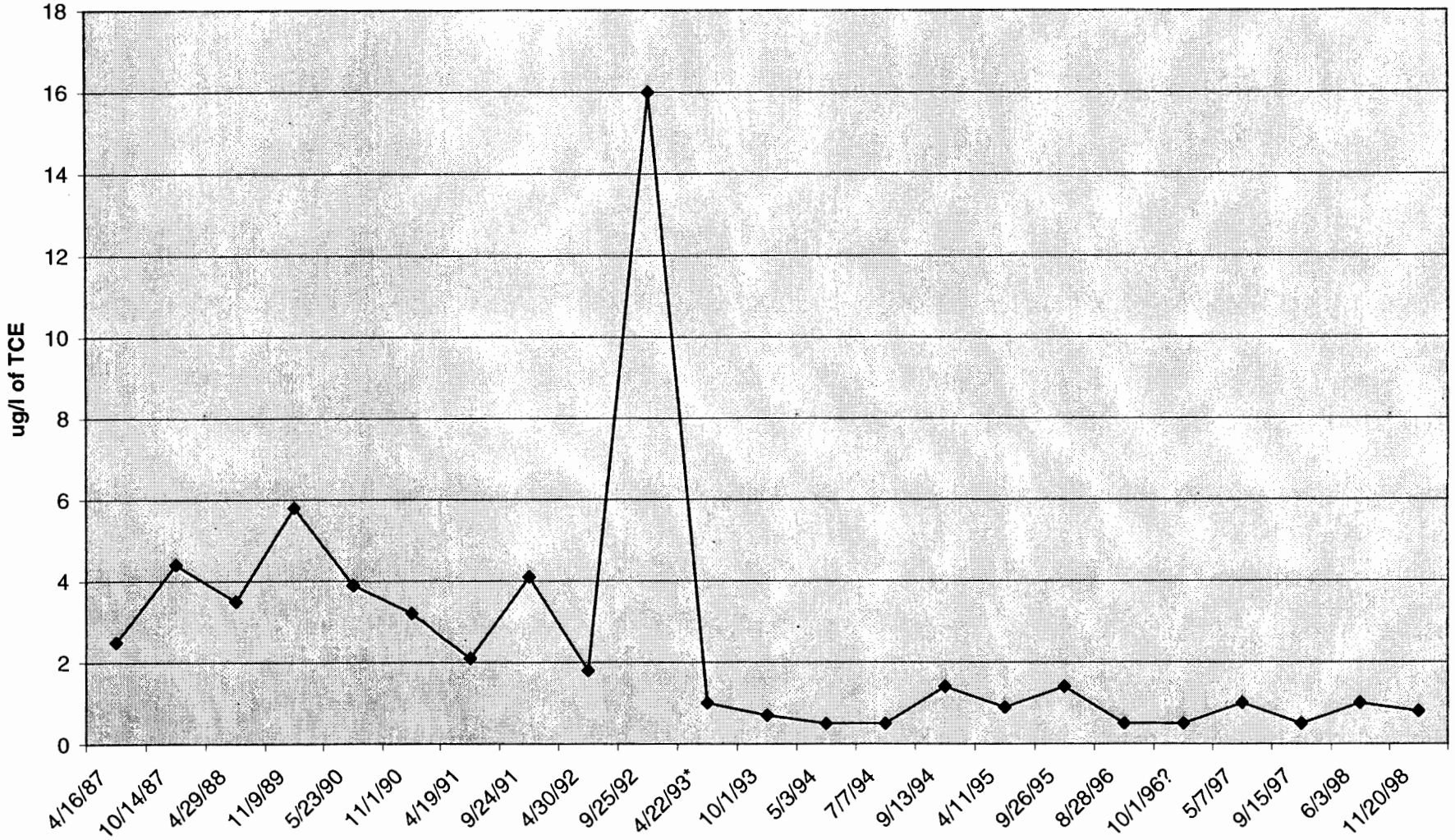

Figure 2
TCE at the Valynn Mfg. Well - 1979 through Present

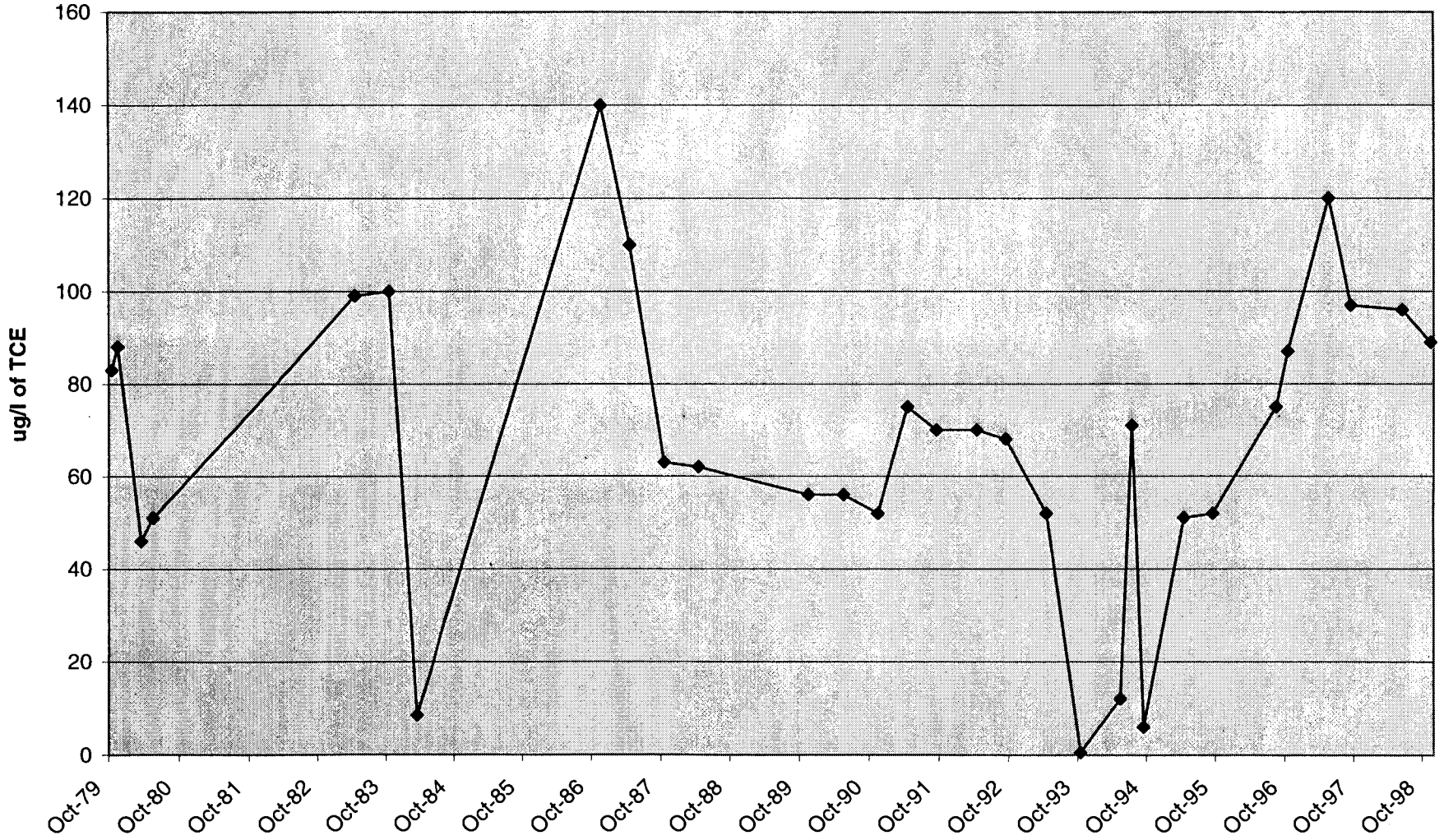

Figure 3
TCE at Troxel Cemetery Well - 1979 through Present

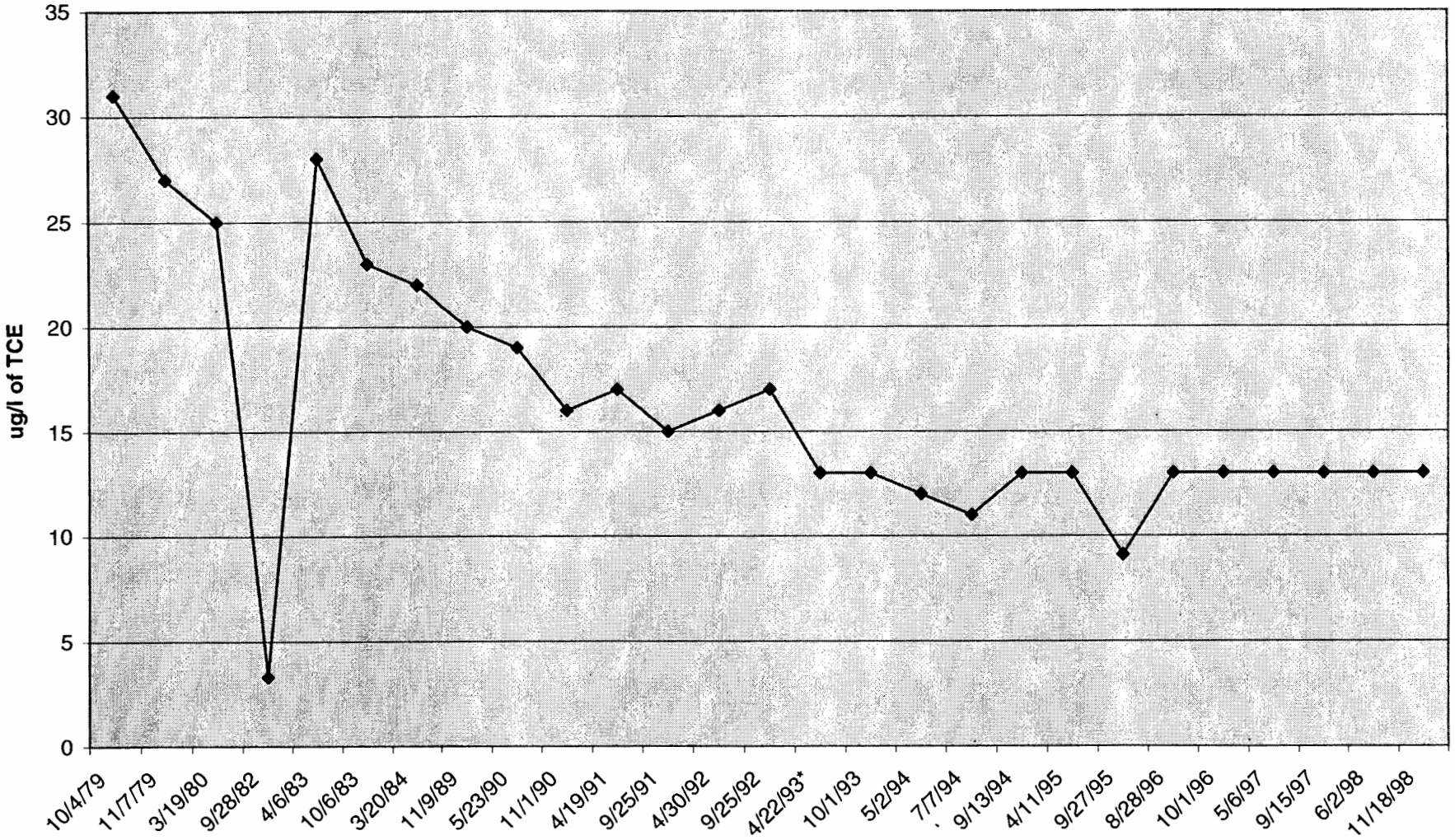

Figure 4
TCE at the Haraczka Well - 1987 through Present

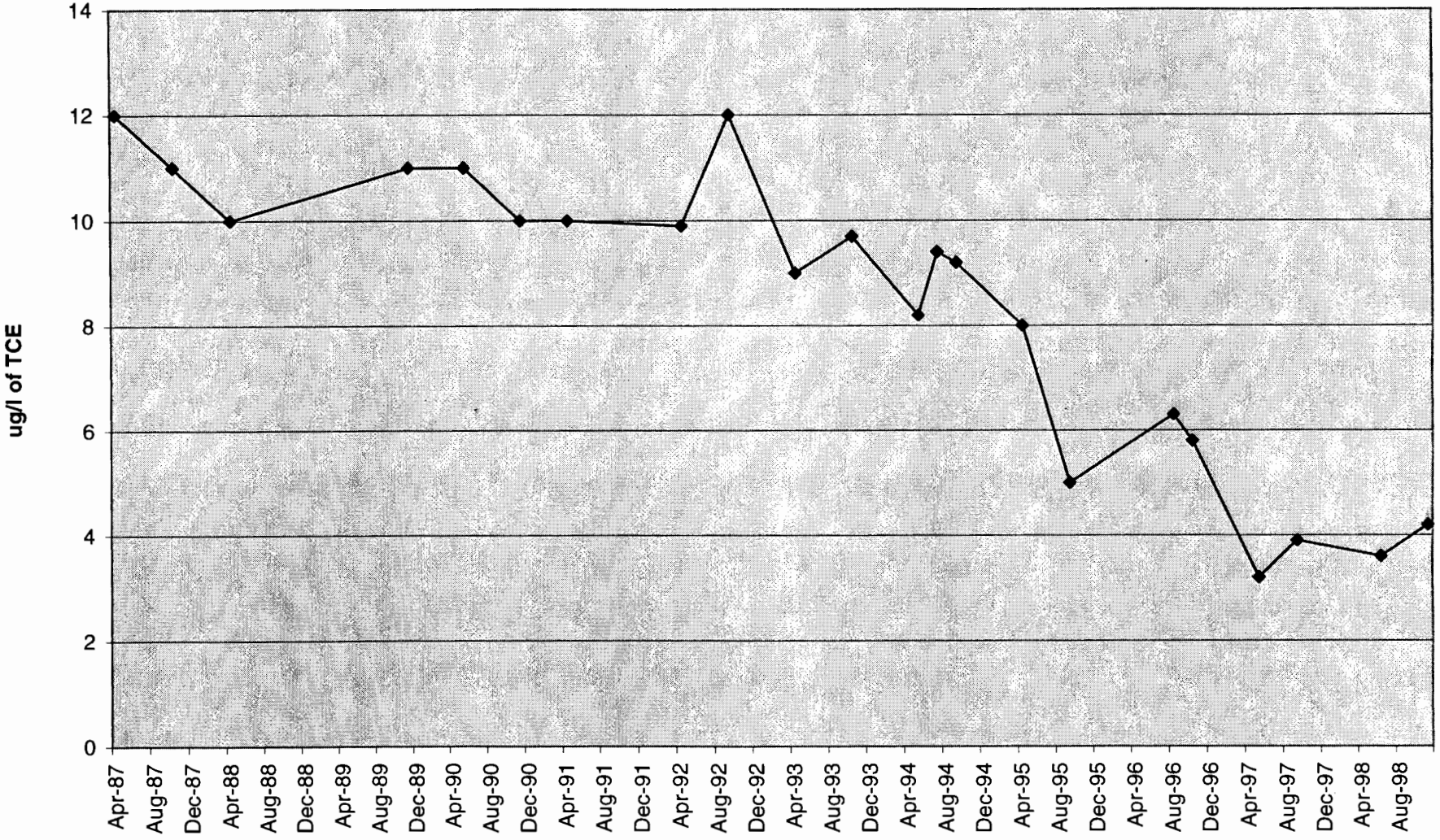

Figure 5
TCE at the Hammond Bros. Well - 1979 through present

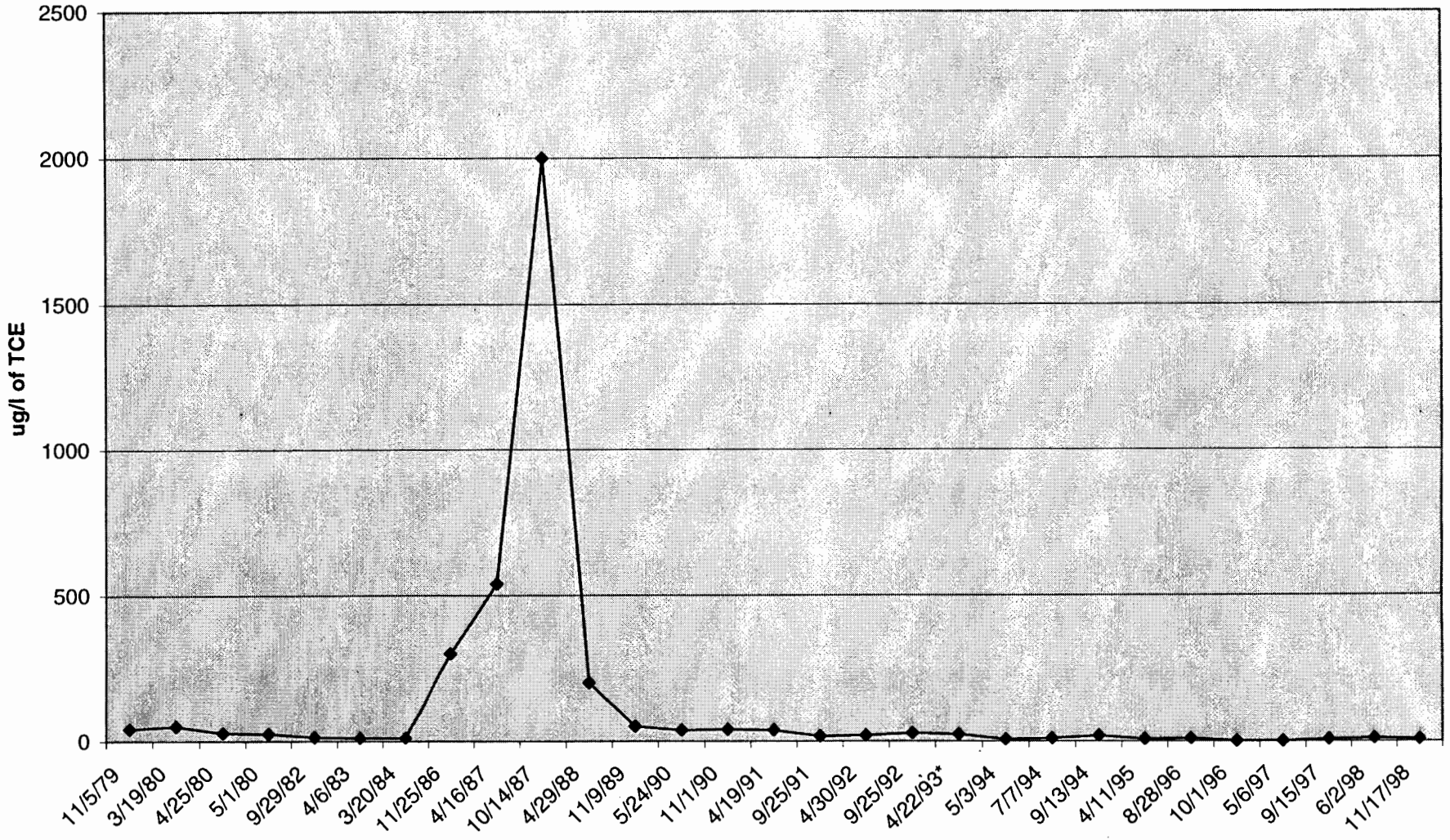

Figure 6
TCE at the Hammond Bros Well - 1988 through Present

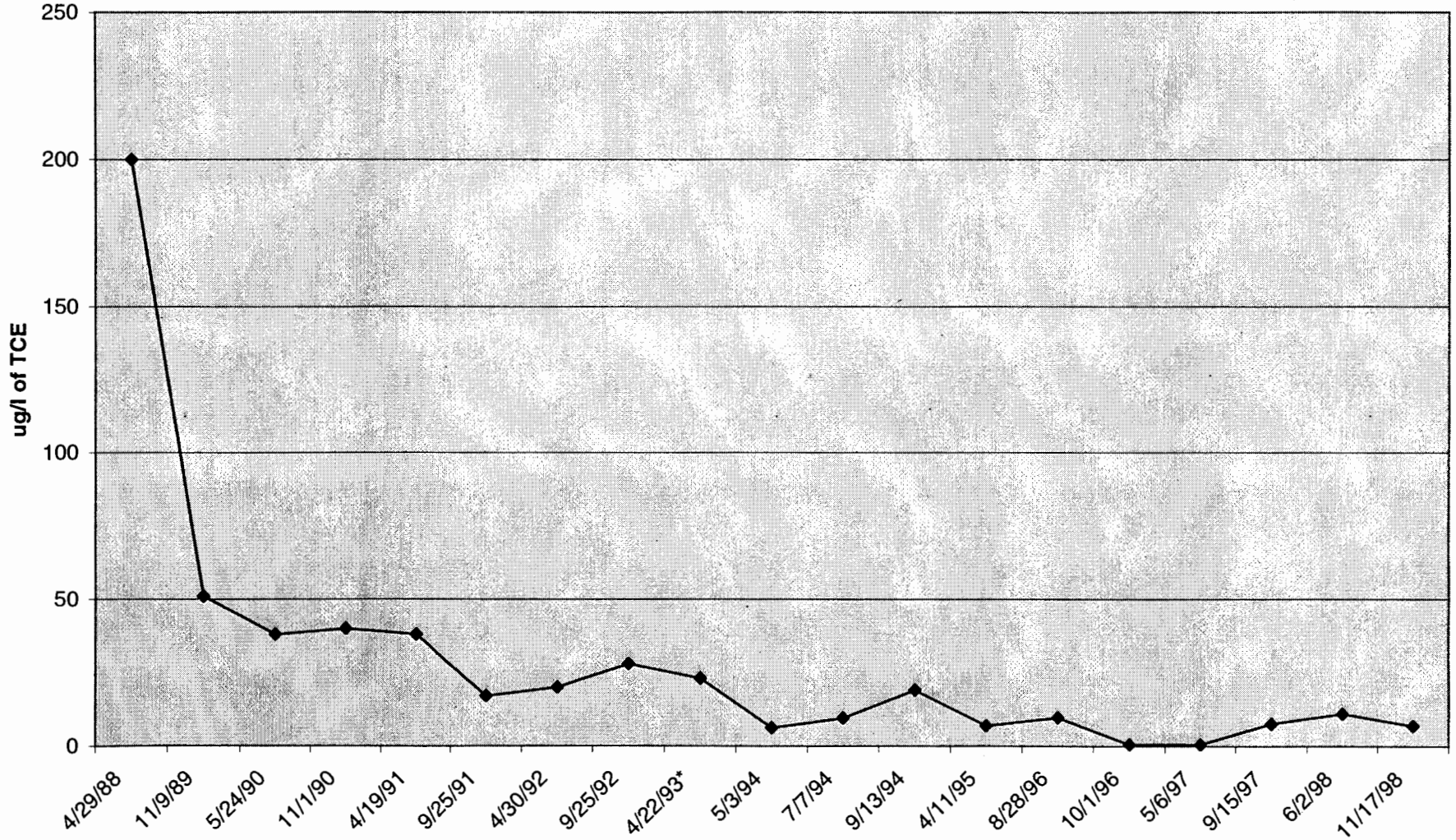

Figure 7a
TCE at Welsh Well - 1979 through Present

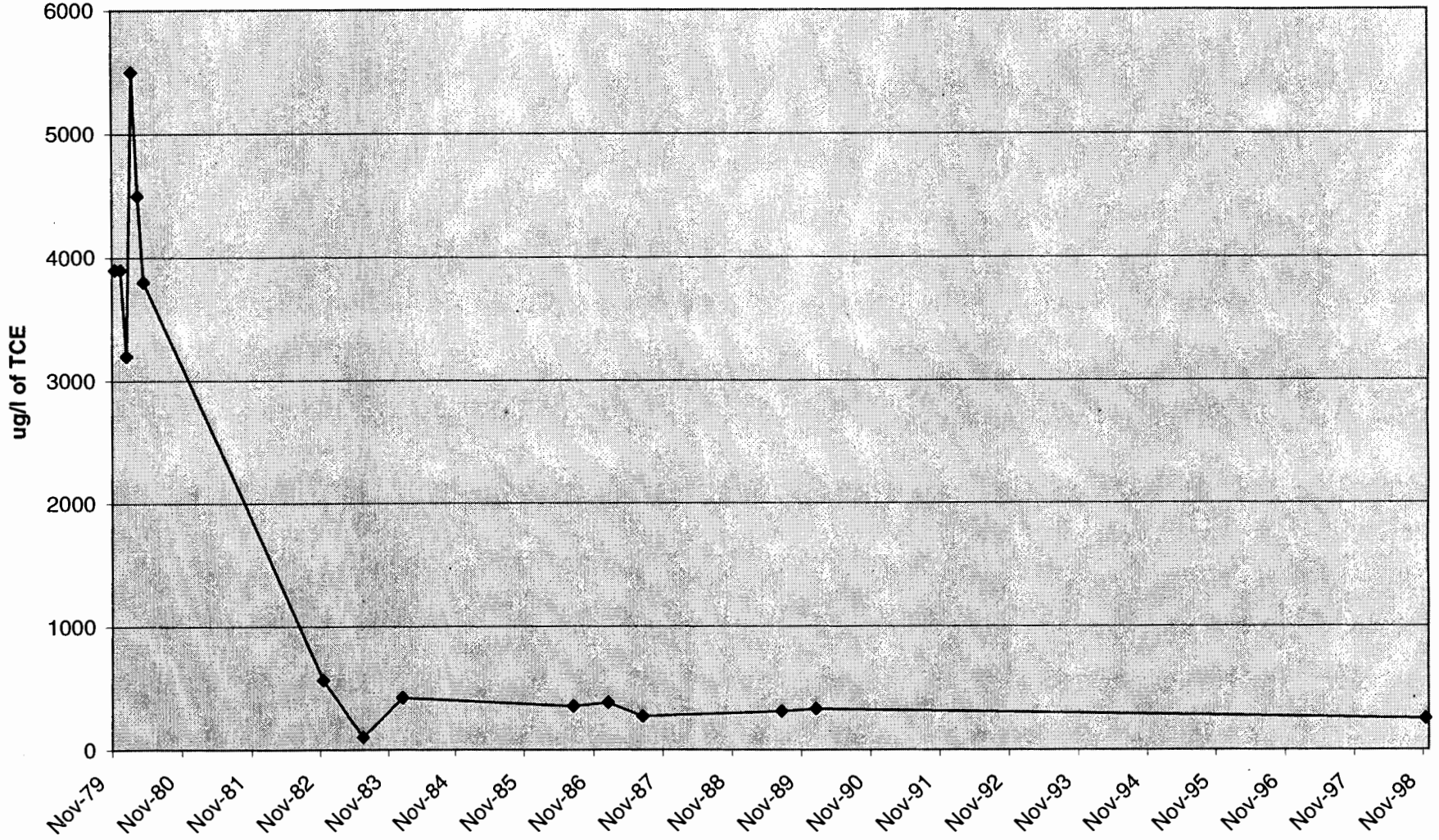

Figure 7b
Welsh Well - 1982 through Present